

PATENT ABSTRACTS OF JAPAN

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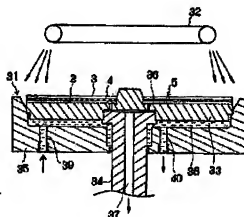
(71)Applicant : RICOH CO LTD

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(72)Inventor : MURAYAMA NOBORU
FURUKAWA RYUICHI
KOBAYASHI SHINJI
UEMOTO HIRONORI**(54) DEVICE FOR LAMINATING THIN SUBSTRATE, OPTICAL DISK MANUFACTURING EQUIPMENT, AND OPTICAL DISK****(57)Abstract:**

PROBLEM TO BE SOLVED: To correct a warp or distortion of a disk to be laminated and to manufacture a laminated optical disk or the like which is always stable even in continuous operation.

SOLUTION: A lower substrate 2 and an upper substrate 3 are stuck fast and held on a holding table 33 set up in a disk holding part 31 holding the lower substrate 2 and the upper substrate 3 with a UV cure adhesive 4 between them and the warp and the distortion on the lower substrate 2 and the upper substrate 3 are corrected. The temperature of this holding table 33 is maintained at a fixed level by a cooling medium circulation part 38 prepared in the disk holding part 31 and the thin substrates are prevented from expansion or distortion by the heat generated when the thin substrates are irradiated with the light including a ultraviolet light.



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CLAIMS

[Claim(s)]

[Claim 1]In a pasting device of a thin substrate which intervenes UV cure adhesive between thin substrates of two upper and lower sides, irradiates with light including ultraviolet rays, stiffens adhesives, and pastes a thin substrate of two sheets together, A pasting device of a thin substrate having a cooling unit which maintains temperature of a holding stand which adsorbs a thin substrate at a substrate attaching part holding a thin substrate of two sheets which intervened UV cure adhesive, and a holding stand to constant temperature.

[Claim 2]In a pasting device of a thin substrate which intervenes UV cure adhesive between thin substrates of two upper and lower sides, irradiates with light including ultraviolet rays, stiffens adhesives, and pastes a thin substrate of two sheets together, A pasting device of a thin substrate having a cooling system which contacts the surface of a holding stand after taking out a thin substrate which irradiated with a holding stand which adsorbs a thin substrate of two sheets which intervened UV cure adhesive, and light including ultraviolet rays, was made to harden adhesives, and was pasted together, and cools temperature of a holding stand to constant temperature.

[Claim 3]In a pasting device of a thin substrate which intervenes UV cure adhesive between thin substrates of two upper and lower sides, irradiates with light including ultraviolet rays, stiffens adhesives, and pastes a thin substrate of two sheets together, A holding stand which moves between discharge positions which discharge a thin substrate which adsorbed a thin substrate of two sheets which intervened UV cure adhesive, and was pasted together to an injection position and an exposure position which irradiates with light including ultraviolet rays, A pasting device of a thin substrate having a cooling system which is formed in moving trucking of a holding

stand between a discharge position and an injection position, contacts on the surface of a holding stand, and cools temperature of a holding stand to constant temperature.

[Claim 4]In a pasting device of a thin substrate which intervenes UV cure adhesive between thin substrates of two upper and lower sides, irradiates with light including ultraviolet rays, stiffens adhesives, and pastes a thin substrate of two sheets together, A holding stand which adsorbs a thin substrate of two sheets which intervened UV cure adhesive, A substrate attaching part which moves between discharge positions which discharge a thin substrate which has a cooling unit which maintains temperature of a holding stand to constant temperature, and was pasted together to an injection position and an exposure position which irradiates with light including ultraviolet rays, A pasting device of a thin substrate having a cooling system which is formed in moving trucking of a substrate attaching part between a discharge position and an injection position, contacts the surface of a holding stand of a substrate attaching part, and cools temperature of a holding stand to constant temperature.

[Claim 5]A pasting device of the thin substrate according to claim 3 or 4 into which temperature of a cooling system is changed according to temperature of a holding stand measured by moving trucking of a holding stand between the above-mentioned discharge position and an injection position.

[Claim 6]A pasting device of the thin substrate according to claim 2, 3, 4, or 5 which provided a thermally conductive high elastic body sheet in a contact surface with a holding stand of the above-mentioned cooling system.

[Claim 7]A manufacturing installation of an optical disc having a pasting device of the thin substrate according to any one of claims 1 to 6.

[Claim 8]An optical disc manufacturing by a manufacturing installation of the optical disc according to claim 6.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates, for example to prevention of the pasting device of thin substrates, such as an optical disk substrate and a sheet film, the manufacturing installation of an optical disc and an optical disc especially curvature, and modification.

[0002]

[Description of the Prior Art]In recent years, the demand of DVDs which have an about

6 to 8 times [of the conventional CD] storage capacity is increasing with increase of the demand of the ream bubble media of the large amount of information. This DVD pastes together the thin disk of the 0.6-mm thickness which provided the Information Storage Division layer in one side to other thin disks which have optical translucency, and is using it as the pasting optical disc of one sheet. Although hot melt adhesive, ultraviolet curing resin, delayed effect ultraviolet curing resin, a double-sided pressure sensitive adhesive sheet, etc. are among the adhesives which paste this thin disk of two sheets together, many acrylic ultraviolet curing resin is used from the field of cost and quality. [0003]As shown, for example in JP,H5-20714,A, the manufacturing method of this pasting optical disc, On the thin disk which has the Information Storage Division layer laid on the holding stand installed horizontally, Ultraviolet curing resin is applied to about 10-mm position from an inner periphery end side by a dispenser at circumference shape, The disk for protection is piled up on besides, a holding stand is rotated, ultraviolet curing resin is opened to the periphery side, when ultraviolet curing resin spreads from a peripheral end face to about 5-mm position, rotation of a holding stand is suspended, and it holds until ultraviolet curing resin spreads to an inside and outside peripheral end face with surface tension. Then, it irradiates with ultraviolet rays, and he stiffens ultraviolet curing resin, and is trying to paste the thin disk of two sheets together.

[0004]Since the disk with which DVD has the Information Storage Division layer has thickness as thin as 0.6 mm, its mechanical strength in a single plate is weak, and it changes the end for about 100 micrometers by prudence. Especially when manufacturing a rewritable recording medium, Form the thin film layer of a with a number of thickness of 100 nm inorganic matter system on this thin disk, and further as a protective layer of an inorganic system thin film layer, If it irradiates with a laser beam in order to apply and stiffen an ultraviolet-curing-resin film (several micrometers about ten micrometers), to apply and stiffen an ultraviolet-curing-resin film (electrification of a plastic board and several micrometers in thickness for crack prevention) or to crystallize a rewritable recording layer, the curvature of a disk will change a lot. Thus, the curvature of the disk single plate made through various processes may also amount to 1 mm at the maximum. Therefore, it was not able to curve, even if it manufactured the optical disc rewritable with the manufacturing method shown in above-mentioned JP,H5-20714,A, and a standard was not able to be fulfilled. [0005]The manufacturing method which cancels the curvature of this optical disc is indicated by JP,H9-262907,A, JP,H10-11820,A, and JP,H10-199053,A, for example. The

manufacturing method shown in JP,H9-262907,A, In pasting two substrates together, the disk of two sheets which sandwiched ultraviolet curing resin is held by the disk attachment component which consists of silica glass, and it presses by an attachment component until the thickness after pasting the disk of two sheets together covers the whole and turns into fixed prescribed thickness.

Then, maintenance by an attachment component is released, it irradiates with ultraviolet rays, and he stiffens ultraviolet curing resin, and is trying to correct a disk.

[0006]The manufacturing method shown in JP,H10-11820,A or JP,H10-199053,A, He irradiates with ultraviolet rays and is trying to stiffen ultraviolet curing resin in pasting the disk of two sheets together, putting and pressing the disk of two sheets which sandwiched ultraviolet curing resin with the flat silica glass of two sheets.

[0007]

[Problem(s) to be Solved by the Invention]It presses by an attachment component until the thickness after pasting the disk of two sheets together turns into fixed prescribed thickness, as shown in JP,H9-262907,A, Then, in the method of releasing maintenance by an attachment component, irradiating with ultraviolet rays, and stiffening ultraviolet curing resin. When pasting together the disk with which curvature exceeds several 100 micrometers as it is effective in what has the comparatively small curvature of the disk before pasting, Since the curvature of a disk returns maintenance of an attachment component even if it shortens time from release to UV irradiation as much as possible, it is impossible to correct curvature thoroughly. If junction power of ultraviolet curing resin is made high as the measure, while it is very difficult for the viscosity of ultraviolet curing resin to rise and to apply to the thickness of about 50-micrometer request uniformly, recycling of ultraviolet curing resin will become difficult.

[0008]In the method shown in JP,H10-11820,A or JP,H10-199053,A. In order to press with silica glass after putting ultraviolet curing resin between the disks of two sheets and making ultraviolet curing resin spread by a spinner, ultraviolet curing resin overflows the peripheral part of a disk, and it adheres to silica glass, and becomes a foreign matter. It pastes together for this adhering foreign matter, and the quality of an optical disc also deteriorates. While ultraviolet curing resin had adhered to silica glass, in order to carry out UV irradiation, the trouble where silica glass and a disk will paste up will occur and the operating ratio of a device will fall remarkably.

[0009]Since the plane accuracy of silica glass and a disk is high, it is easy to generate a vacuum absorption phenomenon between silica glass and a disk. In order to cancel this,

the method of sending in the air for vacuum break between silica glass and a disk is also considered, but. In that case, an airstream way will have to be established in silica glass, nonuniformity will occur in the amount of UV irradiation by this airstream way, it is going to correct curvature, and another curvature factor factor will be made.

[0010]It aims at providing the pasting device of a thin substrate and the manufacturing installation of an optical disc which can manufacture the pasting optical disc always stable also when this invention had improved this demerit and the curvature of the disk pasted together and modification were corrected and run continuously etc., and an optical disc.

[0011]

[Means for Solving the Problem]In a pasting device of a thin substrate which a pasting device of a thin substrate concerning this invention intervenes UV cure adhesive between thin substrates of two upper and lower sides, irradiates with light including ultraviolet rays, stiffens adhesives, and pastes a thin substrate of two sheets together, With a holding stand formed in a substrate attaching part holding a thin substrate of two sheets which intervened UV cure adhesive, a thin substrate is adsorbed, and is held, and curvature of a thin substrate and modification are corrected. It prevents maintaining to constant temperature by a cooling unit which provided temperature of a holding stand holding this thin substrate in a substrate attaching part, and a thin substrate's expanding with heat produced when it irradiates with light including ultraviolet rays, or changing.

[0012]A pasting device of the 2nd thin substrate concerning this invention, It has a cooling system which contacts the surface of a holding stand after taking out a thin substrate which irradiated with a holding stand which adsorbs a thin substrate of two sheets which intervened UV cure adhesive, and light including ultraviolet rays, was made to harden adhesives, and was pasted together, and cools temperature of a holding stand to constant temperature.

[0013]A pasting device of the 3rd thin substrate concerning this invention, A holding stand which moves between discharge positions which discharge a thin substrate which adsorbed a thin substrate of two sheets which intervened UV cure adhesive, and was pasted together to an injection position and an exposure position which irradiates with light including ultraviolet rays, It has a cooling system which is formed in moving trucking of a holding stand between a discharge position and an injection position, contacts on the surface of a holding stand, and cools temperature of a holding stand to constant temperature.

[0014]While maintaining a holding stand which adsorbs a thin substrate of two sheets

which intervened UV cure adhesive to constant temperature by a cooling unit provided in a substrate attaching part, Heat is radiated with a cooling system in which heat which irradiated with light which includes ultraviolet rays by an exposure position, and carried out heat transfer to a holding stand was provided by moving trucking of a holding stand between a discharge position and an injection position, and while always maintaining a holding stand which adsorbs a thin substrate to constant temperature, cool time of a holding stand is shortened.

[0015]It is desirable to maintain a holding stand which changes temperature of a cooling system according to temperature of a holding stand measured by moving trucking of a holding stand between the above-mentioned discharge position and an injection position, and is sent to an injection position to a fixed temperature.

[0016]It is good to provide a thermally conductive high elastic body sheet in a contact surface with a holding stand of a cooling system, to stick a cooling system on the surface of [whole] a holding stand, and to cool a holding stand uniformly.

[0017]A manufacturing installation of an optical disc of this invention has a pasting device of the above-mentioned thin substrate, corrects curvature of a substrate, and modification, and manufactures an optical disc.

[0018]An optical disc of this invention was manufactured by a manufacturing installation of the above-mentioned optical disc, and prevented curvature and modification from arising by aging.

[0019]

[Embodiment of the Invention]Drawing 1 is a top view showing the composition of this invention. The pasting device 1 which pastes the disc substrate of a pasting optical disc together, The disc substrate which has the Information Storage Division layer as shown in the sectional view of drawing 2. (It is hereafter called a lower substrate) The lower substrate injection stage 6 for pasting together 2 and the disc substrate (henceforth an upper substrate) 3 which has translucency by the glue line 4, forming the pasting optical disc 5, and supplying the lower substrate 2, It piles up with the upper substrate injection stage 7 for supplying the upper substrate 3, the cleaning units 8 and 9 and the adhesive application unit 10, and the inversion unit 11, shakes off with the unit 12, and has the spinner 13, the junction unit 14, and the transportation arms 15, 16, and 17.

[0020]The lower substrate injection stage 6 and the upper substrate injection stage 7 have the plurality 19 provided in the index table 18 and the index table 18, for example, 3 sets of substrate attaching parts. The cleaning units 8 and 9 have the cleaner 21 which has the spinner 20 and a discharge means. The adhesive application unit 10 has the disk table 22 and the adhesive coater 23. The inversion unit 11 has the turnover

device 25 which has the periphery zipper 24 and rotates 180 degrees. The superposition unit 12 has the transportation arm, the index table 26, and the plurality 27 provided in the index table 26, for example, 3 sets of substrate attaching parts, 28 provided in the adhesive application unit 10 side, and the transportation arm 29 provided in the inversion unit 11 side. As shown the junction unit 14 in the top view of the rotating table 30 and the rotating table of drawing 3, for example, it was formed in the rotating table 30, it has 4 sets of disk attaching parts 31, and the black light 32. The transportation arm 15 transfers, positions and sets to the adhesive application unit 10 the lower base 2 set to the lower substrate injection stage 6 via the cleaning unit 8. The transportation arm 16 sends the upper base 3 set to the upper substrate injection stage 7 to the inversion unit 11 via the cleaning unit 9. While the transportation arm 17 shakes off the lower substrate 2 and the upper substrate 3 which were piled up in the superposition unit 12 and transfers, positions and sets them to the spinner 13. It transfers, positions and sets to the disk attaching part 31 which shook off and was positioned into the injection position A of the junction unit 14 from the spinner 13. The position of the junction unit 14 which this transportation arm 17 rotates and positions serves as the injection position A, The exposure position B, discharge position C, and the standby position D are established in the downstream of the injection position A of the hand of cut of the rotating table 30, and the black light 32 is formed in the upper part of the disk attaching part 31 of the exposure position B.

[0021]The disk attaching part 31 provided in the rotating table 30 is provided with the following.

The holding stand 33 with which thermal conductivity was formed by SUS420J2 of for example, 14.4 kcal/mhC as shown in the sectional view of drawing 4.

The supporting spindle 34 holding the central part of the holding stand 33. The heat insulation adapter 35 which is formed with thermal insulation, for example, polyacetal etc., and holds the peripheral part of the holding stand 33. Two or more absorbing holes 36 penetrated on the upper surface from the undersurface are formed in the holding stand 33, it is connected to a suction unit and the suction hole 37 which is open for free passage to the absorbing holes 36 of the holding stand 34 is formed in the supporting spindle 34. The cooling-medium circulation part 38 is formed between the undersurface of the holding stand 33, and the upper surface of the heat insulation adapter 35, and it has the cooling-medium feed holes 39 and the cooling-medium discharge hole 40 which are open for free passage to the cooling-medium circulation part 38 to the heat insulation adapter 35.

[0022]When pasting the lower substrate 2 and the upper substrate 3 together with this

pasting device 1, the field which forms the glue line 5 for the lower substrate 2 is turned upwards first, and it positions and arranges on the lower substrate injection stage 6, and a pasting side is turned downward, is positioned on the upper substrate injection stage 7, and the upper substrate 3 is arranged. The lower substrate 2 set to this lower substrate injection stage 6 is sent to the cleaning unit 8 by the transportation arm 15, and the field which is discharged by the cleaning unit 8 and forms the glue line 5 is cleaned. This cleaned lower substrate 2 is transferred to the adhesive application unit 10 by the transportation arm 15. The adhesive application unit 10 applies ultraviolet curing resin to the field which forms the glue line 5 of the transferred lower substrate 2. The lower substrate 2 to which ultraviolet curing resin was applied is piled up by the transportation arm 28 of the superposition unit 12, and is transferred to the substrate attaching part 27 of the substrate injection position A of the unit 12. when the lower substrate 2 is transferred to the substrate attaching part 27, the index table 22 shows drawing 1 -- as -- a counterclockwise rotation -- a definite angle -- for example, it rotates 120 degrees and the lower substrate 2 is moved to the upper substrate installation position F.

[0023]On the other hand, the upper substrate 3 set to the upper substrate injection stage 7 is sent to the cleaning unit 9 by the transportation arm 16, electricity is discharged by the cleaning unit 9, and a pasting side is cleaned. This cleaned upper substrate 3 is sent to the inversion unit 11 by the transportation arm 16, and an up-and-down field is reversed with the inversion unit 11. This reversed upper substrate 3 is piled up by the transportation arm 29 of the superposition unit 12, is sent to the unit 12, and is laid on top of the lower substrate 2 currently held at the substrate attaching part 27 on both sides of ultraviolet curing resin. If the upper substrate 3 is piled up, ultraviolet curing resin will begin to spread with the prudence. The lower substrate 2 and the upper substrate 3 which carried out definite angle rotation of the index table 22 counterclockwise in this state, and were piled up on both sides of ultraviolet curing resin are moved to the substrate sending-out position G. Shake off this lower substrate 2 and upper substrate 3 that were piled up from the substrate sending-out position G by the transportation arm 17, and they are transferred to the spinner 13. An excessive part is shaken off and removed from the peripheral part of the lower substrate 2 and the upper substrate 3 to the exterior in the ultraviolet curing resin which shook off, carried out the high velocity revolution of the spinner 13, and was spread between the lower substrate 2 and the upper substrate 3, and the glue line 5 of predetermined thickness is formed between the lower substrate 2 and the upper substrate 3. Ultraviolet curing resin of this shaken-off surplus is brought together in the

lower part within a housing case, and is discharged outside.

[0024] If it shakes off and the glue line 5 of predetermined thickness is formed by the spinner 13, the lower substrate 2 piled up on both sides of the glue line 5 and the upper substrate 3 will be transferred to the holding stand 33 of the disk attaching part 31 which is in the injection position A of the junction unit 14 by the transportation arm 17. If the lower substrate 2 and the upper substrate 3 are transferred to the holding stand 33 of the disk attaching part 31 in the injection position A, It draws in from the absorbing holes 36 which provided the air which carries out vacuum suction from the suction hole 37 provided in the supporting spindle 34 of the disk attaching part 31, and is between the lower substrate 2 and the holding stand 33 in the holding stand 33, and vacuum absorption of the whole surface of the lower substrate 2 is uniformly carried out to the holding stand 33. The modification of some and curvature which the lower substrate 2 has are corrected by this vacuum absorption, and that whole surface can stick to the holding stand 33 uniformly. The disk attaching part 31 holding this lower substrate 2, Cooling media, such as water, an oil, air, are supplied to the cooling-medium circulation part 38 from the cooling-medium feed holes 39 beforehand provided in the heat insulation adapter 35, the supplied cooling medium is discharged from the cooling-medium discharge hole 40, it circulates through a cooling medium to the cooling-medium circulation part 238, and the holding stand 33 is maintained to constant temperature. As the disk attaching part 31 holding the lower substrate 2 which rotated the rotating table 30 90 degrees and was piled up, and the upper substrate 3 is moved to the exposure position B in this state and it is shown in drawing 4, The ultraviolet curing resin which irradiates with ultraviolet rays from the black light 32, and forms the glue line 5 is hardened, the lower substrate 2 and the upper substrate 3 are pasted together, and the pasting optical disc 5 is formed. When irradiating with these ultraviolet rays, heat transfer of the compound heat by the heat ray ingredient contained in the ultraviolet rays with which it irradiates, such as radiant heat and reaction fever of ultraviolet curing resin, is carried out to the holding stand 33 through the lower substrate 2. The heat which got across to this holding stand 33 is told to the cooling medium which circulates through the cooling-medium circulation part 38, and is discharged outside. Therefore, the compound heat generated when having hardened the ultraviolet curing resin which can always maintain the holding stand 33 to a fixed temperature, irradiates with ultraviolet rays, and forms the glue line 5 can prevent minute expansion and temperature gradient from arising in the lower substrate 2 or the upper substrate 3. Therefore, while being stabilized and being able to form the pasting optical disc 5 which has neither curvature nor modification over the whole

surface, the curvature and modification which are produced with progress of time after pasting according to the minute expansion produced in the lower substrate 2 or the upper substrate 3 or a temperature gradient can be prevented. It can also prevent thermal conductivity's forming the heat insulation adapter 35 of the disk attaching part 31 by 0.2 kcal/mhC, small polyacetal, etc., and the compound heat generated at the time of UV irradiation getting across to the rotating table 30.

[0025]After hardening the ultraviolet curing resin which irradiates with ultraviolet rays by the exposure position B, and forms the glue line 5 and forming the pasting optical disc 5, The disk attaching part 31 which rotates the rotating table 30 90 degrees and is in the exposure position B is moved to discharge position C, and the vacuum suction which is adsorbing the pasting optical disc 5 at the holding stand 33 is canceled. The pasting optical disc 5 of which this vacuum absorption was canceled is removed from the holding stand 33 by a handling means, and it conveys to a next process. If the pasting optical disc 5 is removed by discharge position C, the rotating table 30 will be rotated 90 degrees and the disk attaching part 31 will be moved to the standby position D. By cooling to constant temperature with the cooling medium which circulates through the holding stand 33 of the disk attaching part 31 which moved to this standby position D to the cooling-medium circulation part 38, the holding stand 33 of the disk attaching part 31 which moves to the injection position A is always maintainable to a fixed temperature.

[0026]Although the cooling-medium circulation part 38 which cools the holding stand 33 was formed in the disk attaching part 31 provided in the rotating table 30 and the case where the holding stand 33 was cooled to constant temperature with the cooling medium which circulates through the cooling-medium circulation part 38 was explained by said explanation, The holding stand 33 of each disk attaching part 31 which formed the cooling system in the standby position D of the rotating table 30, and was provided in the rotating table 30 may be cooled to constant temperature.

[0027]For example, the condensator 41 which circulates through a cooling medium, and is cooled or is cooled by Peltier effect, a cooling fan, etc. as shown in the lineblock diagram of drawing 5, The cooling plate 42 attached to the cooling unit of the condensator 41, and the elastic body sheet 43 stuck on the surface of the cooling plate 42, With the cooling unit temperature sensor 44 which detects the temperature of the cooling plate 42, constitute the refrigeration unit 45 and This refrigeration unit 45, The cooling system 47 is constituted from the lifting device 46 which goes up and down the refrigeration unit 45, This cooling system 47 is arranged in the upper part of the standby position D of the rotating table 30, and the noncontact holding stand

temperature sensor 48 is arranged in the upper part of a course which the disk attaching part 31 moves to the standby position D from discharge position C. In the thermostat 50 of this cooling system 47, as shown in the block diagram of drawing 6, it has the measuring part 51 and the control section 52. The holding stand thermometry part 53 which measures the temperature of the holding stand 33 with the output from the holding stand temperature sensor 48 to the measuring part 51, It has the cooling unit thermometry part 54 which measures the temperature of the cooling plate 45 with the output from the cooler temperature sensor 44, The quantity-of-heat operation part 55 which computes the amount of potential heat of the holding stand 33 to the control section 52 from the temperature of the holding stand 33 detected in the holding stand thermometry part 53, It has the temperature control part 56 which controls the temperature of the condensator 41 by temperature of the cooling plate 42 detected in the amount of potential heat and the cooling unit thermometry part 54 of the holding stand 33 calculated by the quantity-of-heat operation part 55.

[0028]And by the injection position A, rotating the rotating table 30 to fixed timing to the holding stand 33 of the disk attaching part 31. Vacuum absorption of the lower substrate 2 and the upper substrate 3 which were piled up on both sides of the glue line 5 is carried out, The ultraviolet-rays effect resin which irradiates with ultraviolet rays by the exposure position B, and constitutes the glue line 5 is hardened, and after removing the pasting optical disc 5 which formed and formed the pasting optical disc 5 from discharge position C, the disk attaching part 31 is moved to the standby position D from discharge position C. If the disk attaching part 31 moves to the standby position D, the refrigeration unit 45 will be dropped with the lifting device 46, the elastic body sheet 43 will be contacted on the surface of the holding stand 33, the heat told to the holding stand 33 by UV irradiation will be absorbed to the cooling plate 44, and the holding stand 33 will be cooled. Since the elastic body sheet 43 is formed in the surface of the refrigeration unit 45 which absorbs heat from the holding stand 33 when cooling this holding stand 33, when descending and contacting the refrigeration unit 45 to the holding stand 33, It can prevent contacting per piece and the holding stand 33 whole can be cooled uniformly. Since the heat of the holding stand 33 is absorbed with the cooling plate 44 via the elastic body sheet 43, the elastic body sheet 43 is good for thermal conductivity to use the gel sheet of 1.5 or more W/mK and a big material, for example, Gell Tech company, etc.

[0029]When cooling this holding stand 33, while moving the disk attaching part 31 to the standby position D from discharge position C, the holding stand thermometry part 53 measures the temperature of the holding stand 33 with the output from the holding

stand temperature sensor 48, and sends it to the quantity-of-heat operation part 55. From the capacity of the holding stand 33 and construction material which were beforehand set to the temperature of the sent holding stand 33, the quantity-of-heat operation part 55 calculates the quantity of heat which the holding stand 33 holds then, and sends the calculated quantity of heat to the temperature control part 56. On the other hand, while descending and contacting the refrigeration unit 45 to the holding stand 33, the cooling unit thermometry part 54 measures the temperature of a contact portion with the holding stand 33 with the output from the cooling unit temperature sensor 44, and sends it to the temperature control part 56. The temperature control part 56 controls the cooling temperature of the condensator 41 from the temperature and the tact time of a contact portion of the quantity of heat which the holding stand 33 which moved to the standby position D holds, and the refrigeration unit 45 and the holding stand 33, and cools the holding stand 33 to constant temperature. Thus, the holding stand 33 which carries the lower substrate 2 which moved to the injection position A and piled up the heat told to the holding stand 33 by UV irradiation by radiating heat by the standby position D, and the upper substrate 3 is always maintainable to a fixed temperature. The minimum cooling temperature which cools the holding stand 33 with the refrigeration unit 45 here is good to use temperature more than the dew point of the environment where the pasting device 1 has set. Thus, by making the minimum cooling temperature into the temperature more than the dew point, it can prevent the surface of the cooled holding stand 3 dewing, and when pasting the lower substrate 2 and the upper substrate 3 together, it can prevent an adverse effect arising.

[0030]While maintaining the holding stand 33 to constant temperature with the cooling medium which circulates through the cooling-medium circulation part 38, the heat which irradiated with ultraviolet rays by the exposure position B, and carried out heat transfer to the holding stand 33 may be made to radiate heat with the cooling system 47 by the standby position D. Thus, by radiating heat with the cooling system 47 by the standby position D in the heat which irradiated with ultraviolet rays by the exposure position B, and carried out heat transfer to the holding stand 33, while maintaining the holding stand 33 to constant temperature with a cooling medium, While always maintaining the holding stand 33 to constant temperature, the cool time by the cooling system 47 can be shortened, and working capacity can be raised.

[0031]Although vacuum absorption of the lower substrate 2 was carried out to the holding stand 33 and the case where the curvature of the lower substrate 2 and modification were corrected was explained by said explanation, the lower substrate 2 is adsorbed at the holding stand 33, and it may be made to correct the curvature of the

lower substrate 2, and modification by electrostatic adsorption etc.

[0032]

[Effect of the Invention]By this invention adsorbing and holding a thin substrate with the holding stand formed in the substrate attaching part which holds the thin substrate of two sheets which intervened UV cure adhesive as explained above, and correcting the curvature of a thin substrate, and modification, Curvature and modification can be prevented from arising in the substrate pasted together, and a flat lamination board can be manufactured.

[0033]By maintaining the temperature of the holding stand holding a thin substrate to constant temperature by the cooling unit provided in the substrate attaching part, It can prevent a thin substrate's expanding with the heat produced when it irradiates with light including ultraviolet rays, or changing, and the curvature and modification by aging can be prevented from arising in the substrate pasted together.

[0034]By contacting a cooling system on the surface of the holding stand after taking out the thin substrate which irradiated with light including ultraviolet rays, was made to harden adhesives, and was pasted together, and cooling the temperature of a holding stand to constant temperature, Even if it repeats the exposure of light including ultraviolet rays, it can prevent accumulating heat in a holding stand, and the lamination board which neither curvature nor modification produces can be stabilized and ****(ed).

[0035]Between the discharge positions which discharge the thin substrate pasted together to the exposure position which irradiates with the light which includes an injection position and ultraviolet rays for the holding stand which adsorbed the thin substrate is moved, By contacting a cooling system on the surface of a holding stand by the moving trucking of the holding stand between a discharge position and an injection position, and cooling the temperature of a holding stand to constant temperature, The curvature and modification by aging can be prevented from arising in the substrate pasted together while preventing curvature and modification from arising in the substrate which could always maintain the holding stand which adsorbs a thin substrate to a fixed temperature, and pasted it together by the injection position.

[0036]The holding stand sent to an injection position is always maintainable to a fixed temperature by changing the temperature of a cooling system according to the temperature of the holding stand measured by the moving trucking of the holding stand between a discharge position and an injection position.

[0037]By providing a thermally conductive high elastic body sheet in a contact surface with the holding stand of a cooling system, a cooling system can be stuck on the surface

of [whole] a holding stand, a holding stand can be cooled uniformly, and it can prevent temperature unevenness arising in the cooled holding stand.

[0038]By having a pasting device of the above-mentioned thin substrate in the manufacturing installation of an optical disc, correcting the curvature of a substrate, and modification to it, and manufacturing an optical disc to it, it is stabilized and the good optical disc which there is neither curvature nor modification and the curvature or modification by aging do not produce can be manufactured.

[0039]Since neither curvature nor modification arises by aging, the optical disc manufactured by the manufacturing installation of this optical disc can stabilize and record and play information.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a top view showing the composition of this invention.

[Drawing 2]It is a sectional view showing the composition of a pasting optical disc.

[Drawing 3]It is a top view showing the composition of the rotating table of a junction unit.

[Drawing 4]It is a sectional view showing the composition of the disk attaching part of a junction unit.

[Drawing 5]It is a lineblock diagram of the cooling system of a junction unit.

[Drawing 6]It is a block diagram showing the composition of the thermostat of a cooling system.

[Description of Notations]

1; pasting device, 2; lower substrate, 3; upper substrate, 4; glue line, 5; A pasting optical disc, 6; lower substrate injection stage, 7; upper substrate injection stage, 8, 9; A cleaning unit, 10; adhesive application unit, 11; inversion unit, 12; A superposition unit, 13; Shake off and A spinner, 14; junction unit, 15 and 16, 17; transportation arm, 30; A rotating table, 31; disk attaching part, 32; black light, 33; A holding stand, 34; supporting spindle, 35; heat insulation adapter, 36; absorbing holes, 37; suction hole, 38; cooling-medium circulation part, 39; cooling-medium feed holes, 40; cooling-medium discharge hole, 41; condensator, 42; cooling plate, 43; elastic body sheet, 44; cooling unit temperature sensor, 45; refrigeration unit, 46; lifting device, 47; cooling system, 48; holding stand temperature sensor.